FIG.1

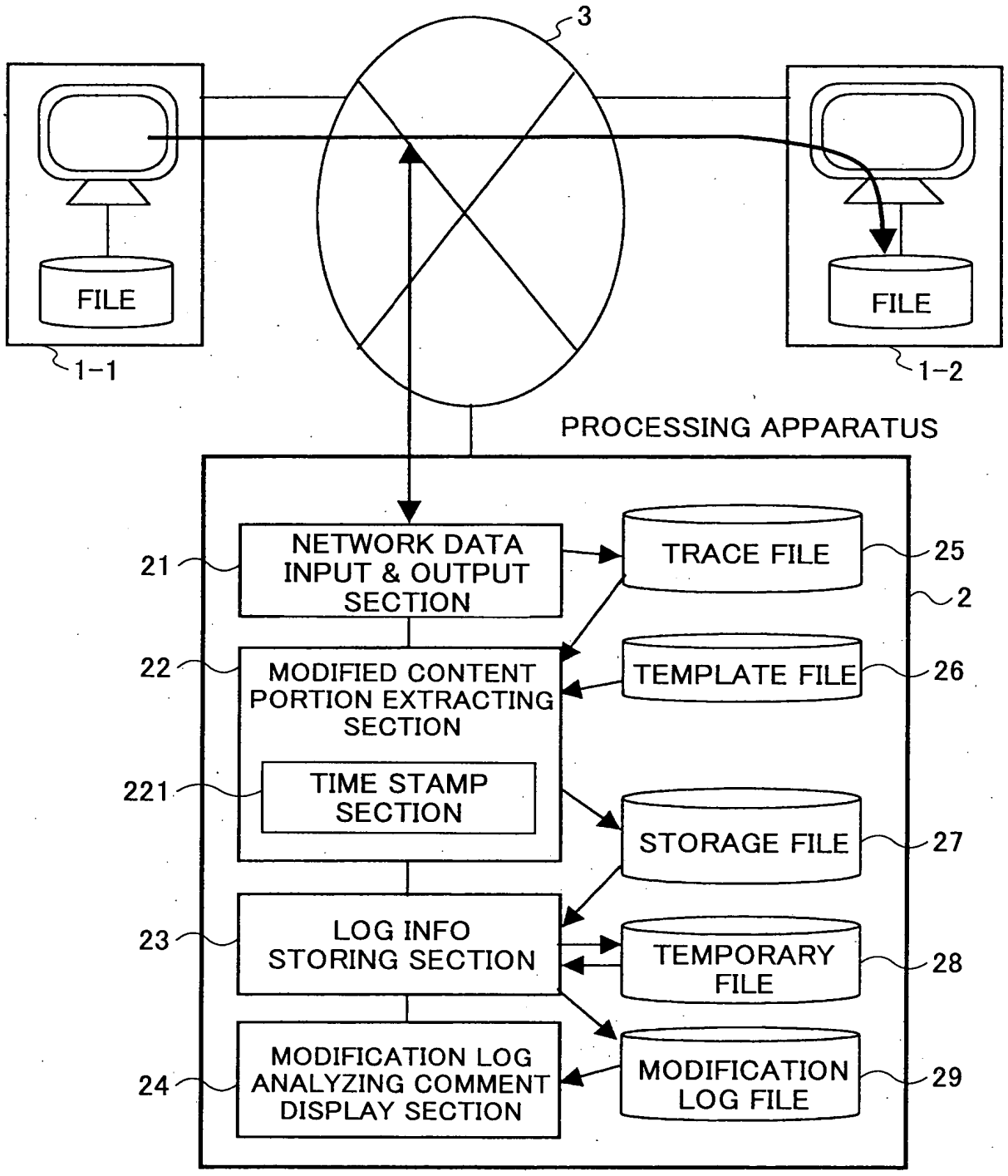

3
FILE
1-1
FILE
1-2
PROCESSING APPARATUS
21
NETWORK DATA INPUT & OUTPUT SECTION
TRACE FILE
25
2
22
MODIFIED CONTENT PORTION EXTRACTING SECTION
TEMPLATE FILE
26
221
TIME STAMP SECTION
STORAGE FILE
27
23
LOG INFO STORING SECTION
TEMPORARY FILE
28
24
MODIFICATION LOG ANALYZING COMMENT DISPLAY SECTION
MODIFICATION LOG FILE
29

FIG.2

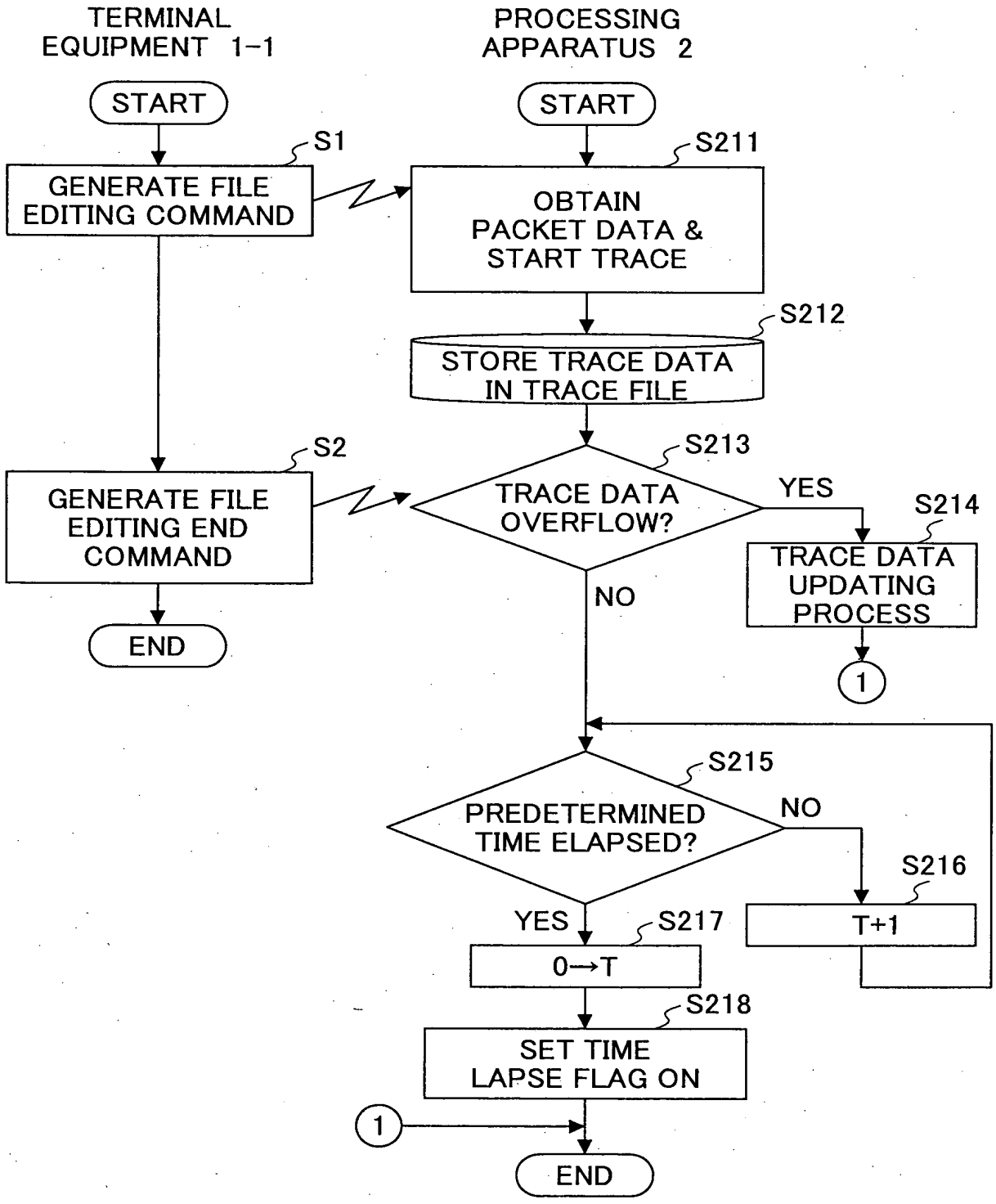
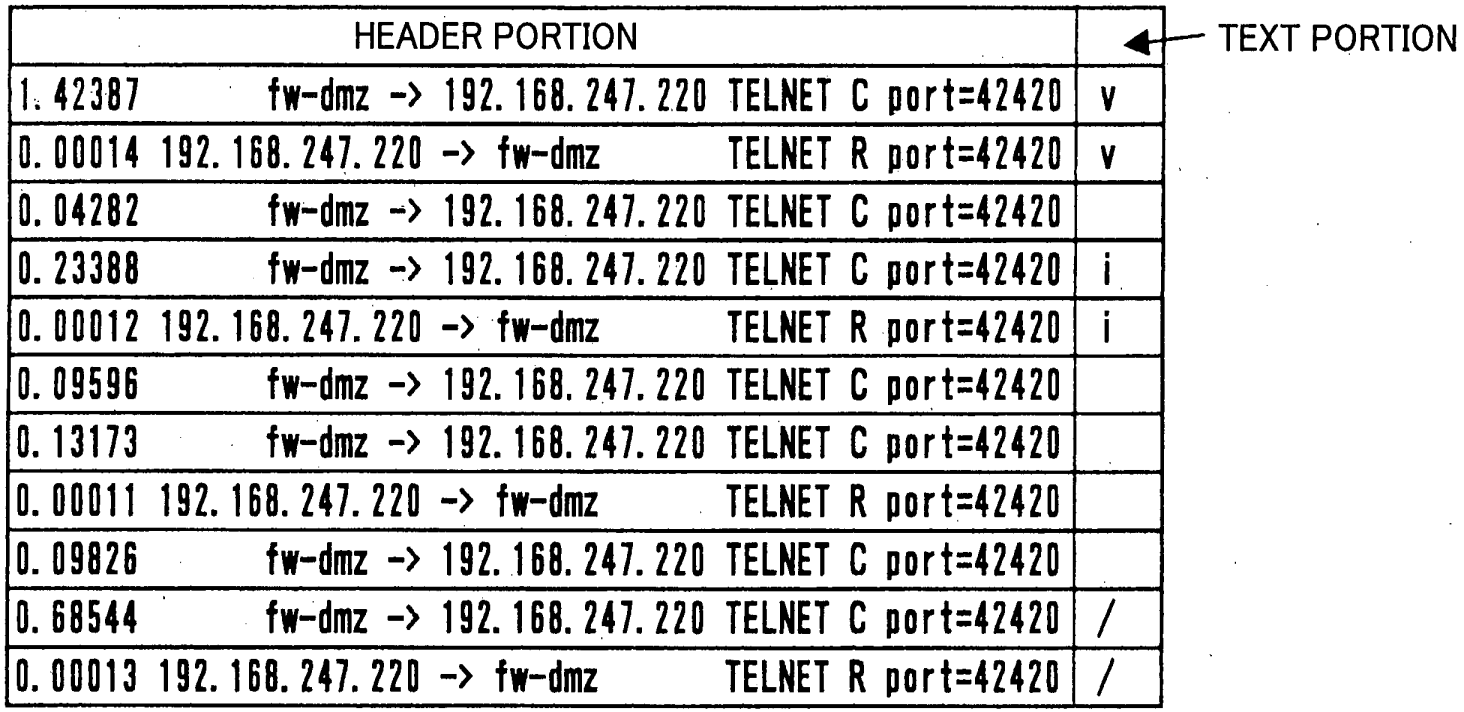

TERMINAL EQUIPMENT 1-1
PROCESSING APPARATUS 2
START
START
S1
S211
GENERATE FILE EDITING COMMAND
OBTAIN PACKET DATA & START TRACE
S212
STORE TRACE DATA IN TRACE FILE
S2
S213
GENERATE FILE EDITING END COMMAND
TRACE DATA OVERFLOW?
YES
S214
TRACE DATA UPDATING PROCESS
NO
END
1
S215
PREDETERMINED TIME ELAPSED?
NO
S216
T+1
YES
S217
0→T
S218
SET TIME LAPSE FLAG ON
1
END

FIG.3



HEADER PORTION	TEXT PORTION
1.42387 fw-dmz -> 192.168.247.220 TELNET C port=42420	v
0.00014 192.168.247.220 -> fw-dmz TELNET R port=42420	v
0.04282 fw-dmz -> 192.168.247.220 TELNET C port=42420	
0.23388 fw-dmz -> 192.168.247.220 TELNET C port=42420	i
0.00012 192.168.247.220 -> fw-dmz TELNET R port=42420	i
0.09596 fw-dmz -> 192.168.247.220 TELNET C port=42420	
0.13173 fw-dmz -> 192.168.247.220 TELNET C port=42420	
0.00011 192.168.247.220 -> fw-dmz TELNET R port=42420	
0.09826 fw-dmz -> 192.168.247.220 TELNET C port=42420	
0.68544 fw-dmz -> 192.168.247.220 TELNET C port=42420	/
0.00013 192.168.247.220 -> fw-dmz TELNET R port=42420	/

FIG.4

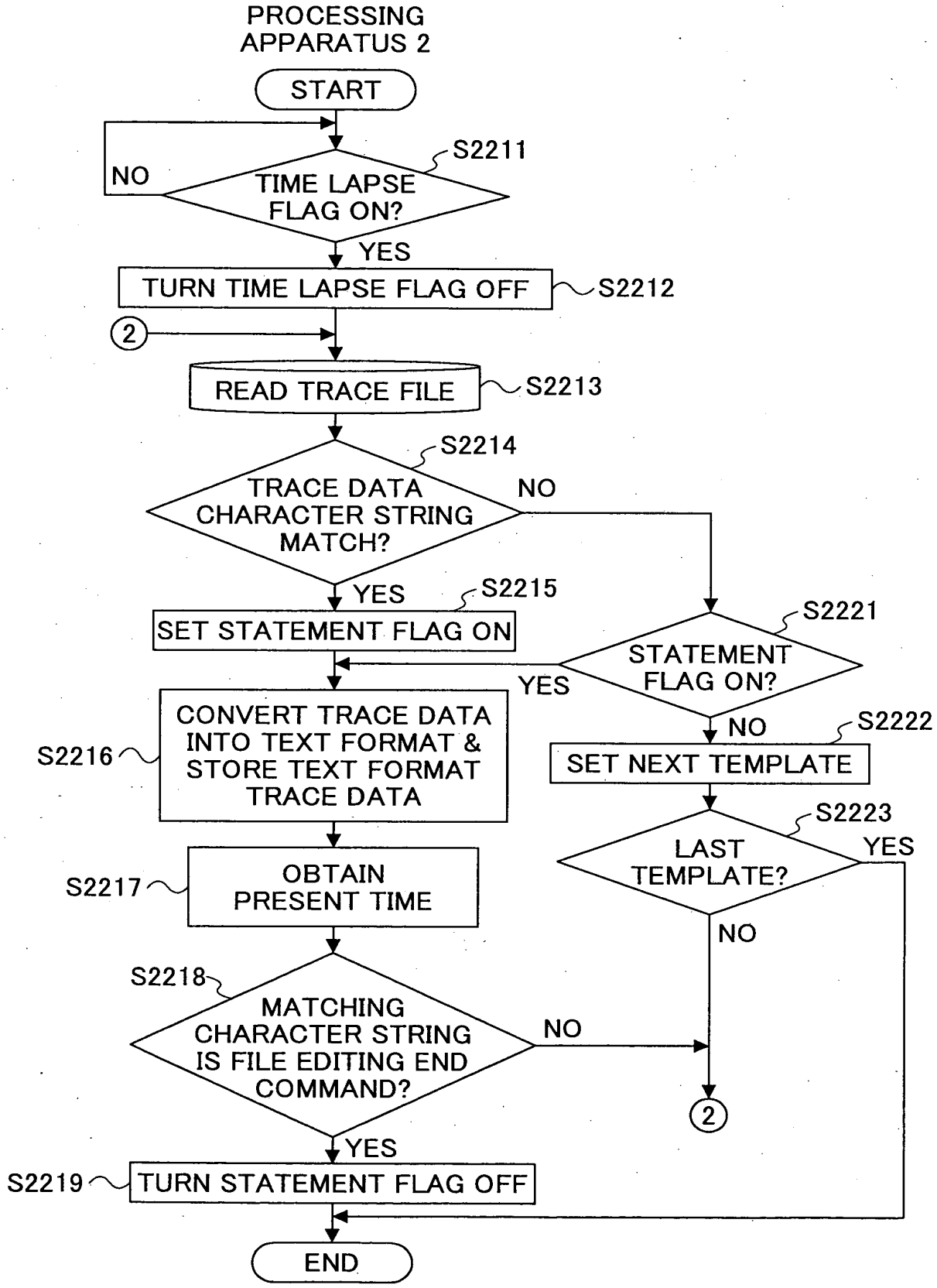

PROCESSING APPARATUS 2
START
S2211
NO
TIME LAPSE FLAG ON?
YES
TURN TIME LAPSE FLAG OFF
S2212
2
READ TRACE FILE
S2213
S2214
TRACE DATA CHARACTER STRING MATCH?
NO
YES
S2215
SET STATEMENT FLAG ON
S2221
STATEMENT FLAG ON?
YES
NO
S2222
SET NEXT TEMPLATE
S2216
CONVERT TRACE DATA INTO TEXT FORMAT & STORE TEXT FORMAT TRACE DATA
S2223
LAST TEMPLATE?
YES
NO
S2217
OBTAIN PRESENT TIME
S2218
MATCHING CHARACTER STRING IS FILE EDITING END COMMAND?
NO
2
YES
S2219
TURN STATEMENT FLAG OFF
END

FIG.5

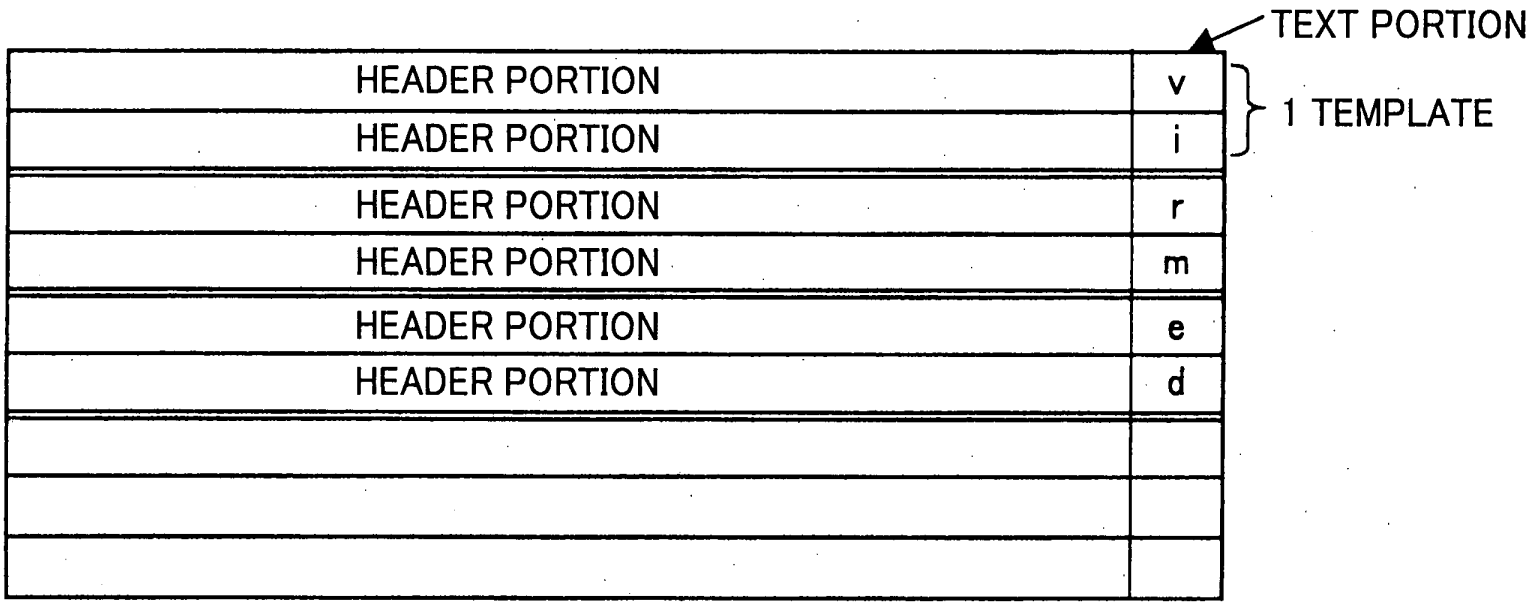

TEXT PORTION
HEADER PORTION
v
HEADER PORTION
i
1 TEMPLATE
HEADER PORTION
r
HEADER PORTION
m
HEADER PORTION
e
HEADER PORTION
d

FIG.6

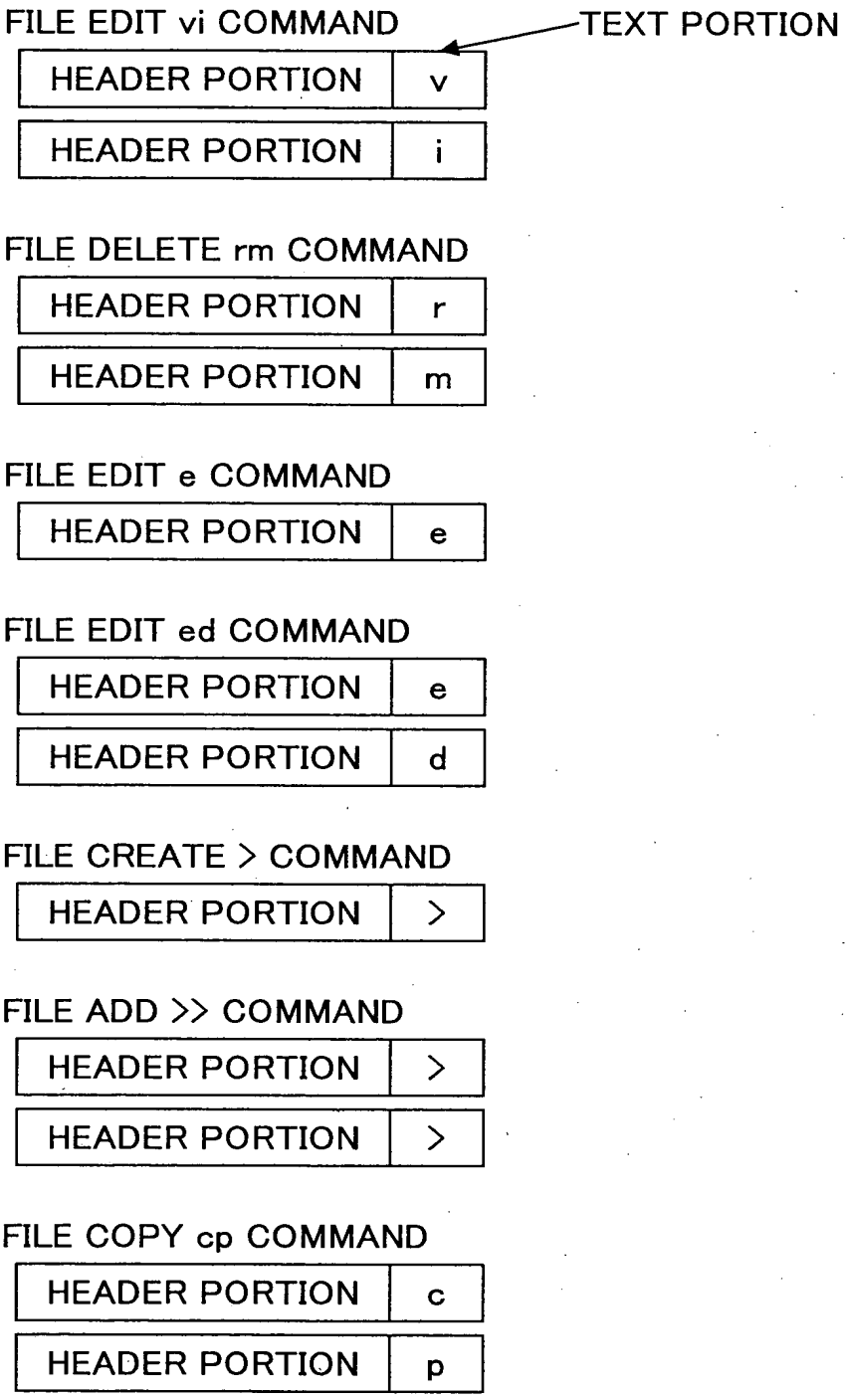

FILE EDIT vi COMMAND
TEXT PORTION
HEADER PORTION
v
HEADER PORTION
i
FILE DELETE rm COMMAND
HEADER PORTION
r
HEADER PORTION
m
FILE EDIT e COMMAND
HEADER PORTION
e
FILE EDIT ed COMMAND
HEADER PORTION
e
HEADER PORTION
d
FILE CREATE > COMMAND
HEADER PORTION
>
FILE ADD >> COMMAND
HEADER PORTION
>
HEADER PORTION
>
FILE COPY cp COMMAND
HEADER PORTION
c
HEADER PORTION
p

FIG.7

TARGET FILE TERMINAL EQUIPMENT: 192.168.247.220 FILE NAME: test.txt USER NAME: fujiwara MODIFIED TIME: 20020703; 12:10 MODIFYING PROCESS 1: EDIT MODIFYING DATA (AAA→ABC) 30TH LINE
TARGET FILE TERMINAL EQUIPMENT: 192.168.247.220 FILE NAME: test.txt USER NAME: fujiwara MODIFIED TIME: 20020703; 12:10 MODIFYING PROCESS 2: ADD MODIFYING DATA (→DDD) 50TH LINE
TARGET FILE TERMINAL EQUIPMENT: 192.168.247.220 FILE NAME: test.txt USER NAME: fujiwara MODIFIED TIME: 20020703; 12:15 MODIFYING PROCESS 3: EDIT MODIFYING DATA (ABC→ABB) 30TH LINE
TARGET FILE TERMINAL EQUIPMENT: 192.168.247.220 FILE NAME: test.txt USER NAME: fujiwara MODIFIED TIME: 20020703; 12:15 MODIFYING PROCESS 4: EDIT MODIFYING DATA (DDD→EEE) 50TH LINE
TARGET FILE TERMINAL EQUIPMENT: 192.168.247.220 FILE NAME: test.txt USER NAME: fujiwara MODIFIED TIME: 20020703; 12:20 MODIFYING PROCESS 5: FAIL MODIFYING DATA (ABB→ABB) 30TH LINE
TARGET FILE TERMINAL EQUIPMENT: 192.168.247.225 FILE NAME: qqqq.txt ·····

FIG.8

FILE BEFORE EDITING
aaa
bbb
ccc
FILE AFTER EDITING
aaa
bbb
cde
yyy

FIG.9

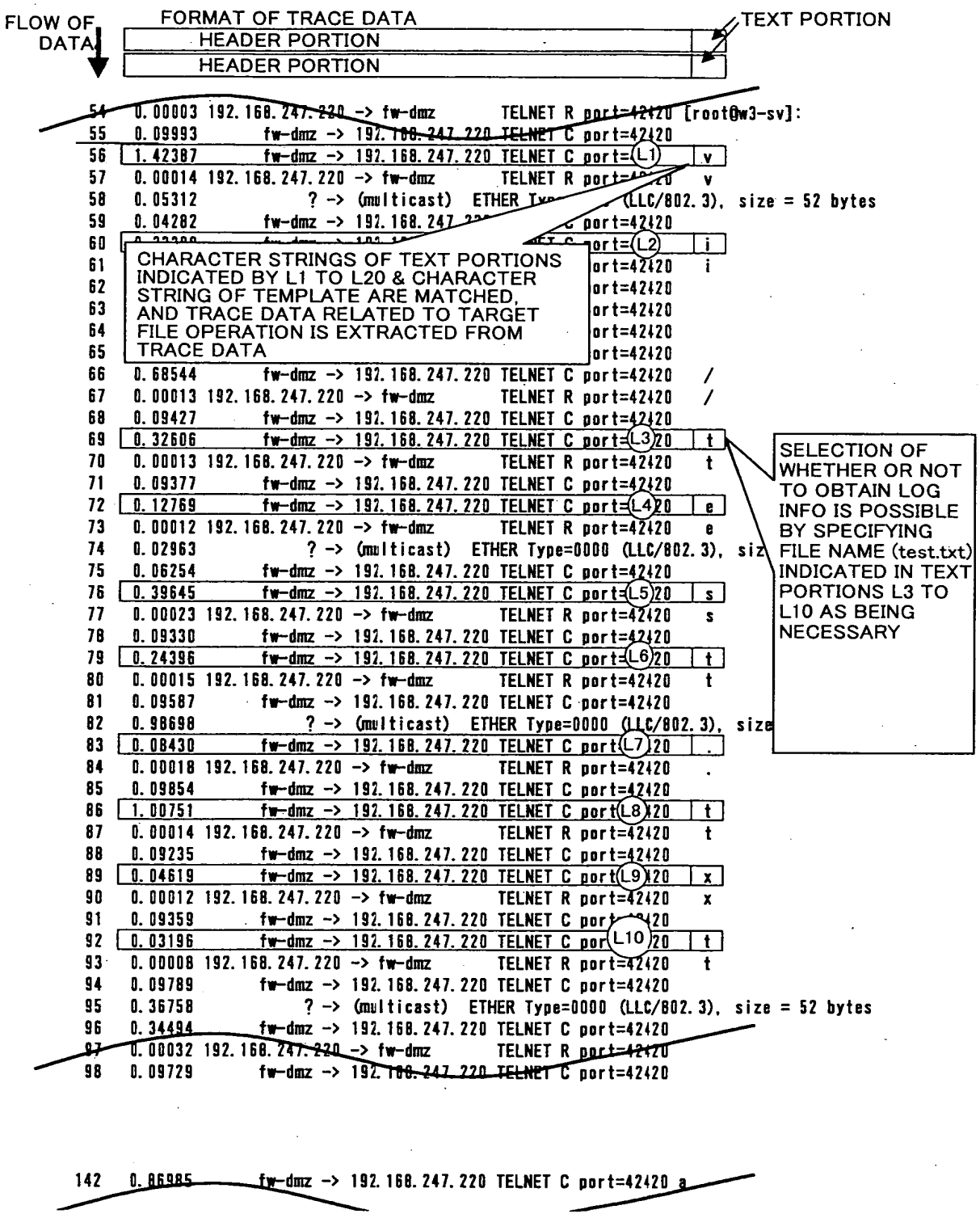

FLOW OF DATA
FORMAT OF TRACE DATA
HEADER PORTION
HEADER PORTION
TEXT PORTION
CHARACTER STRINGS OF TEXT PORTIONS INDICATED BY L1 TO L20 & CHARACTER STRING OF TEMPLATE ARE MATCHED, AND TRACE DATA RELATED TO TARGET FILE OPERATION IS EXTRACTED FROM TRACE DATA
SELECTION OF WHETHER OR NOT TO OBTAIN LOG INFO IS POSSIBLE BY SPECIFYING FILE NAME (test.txt) INDICATED IN TEXT PORTIONS L3 TO L10 AS BEING NECESSARY
L1
L2
L3
L4
L5
L6
L7
L8
L9
L10

FIG.10

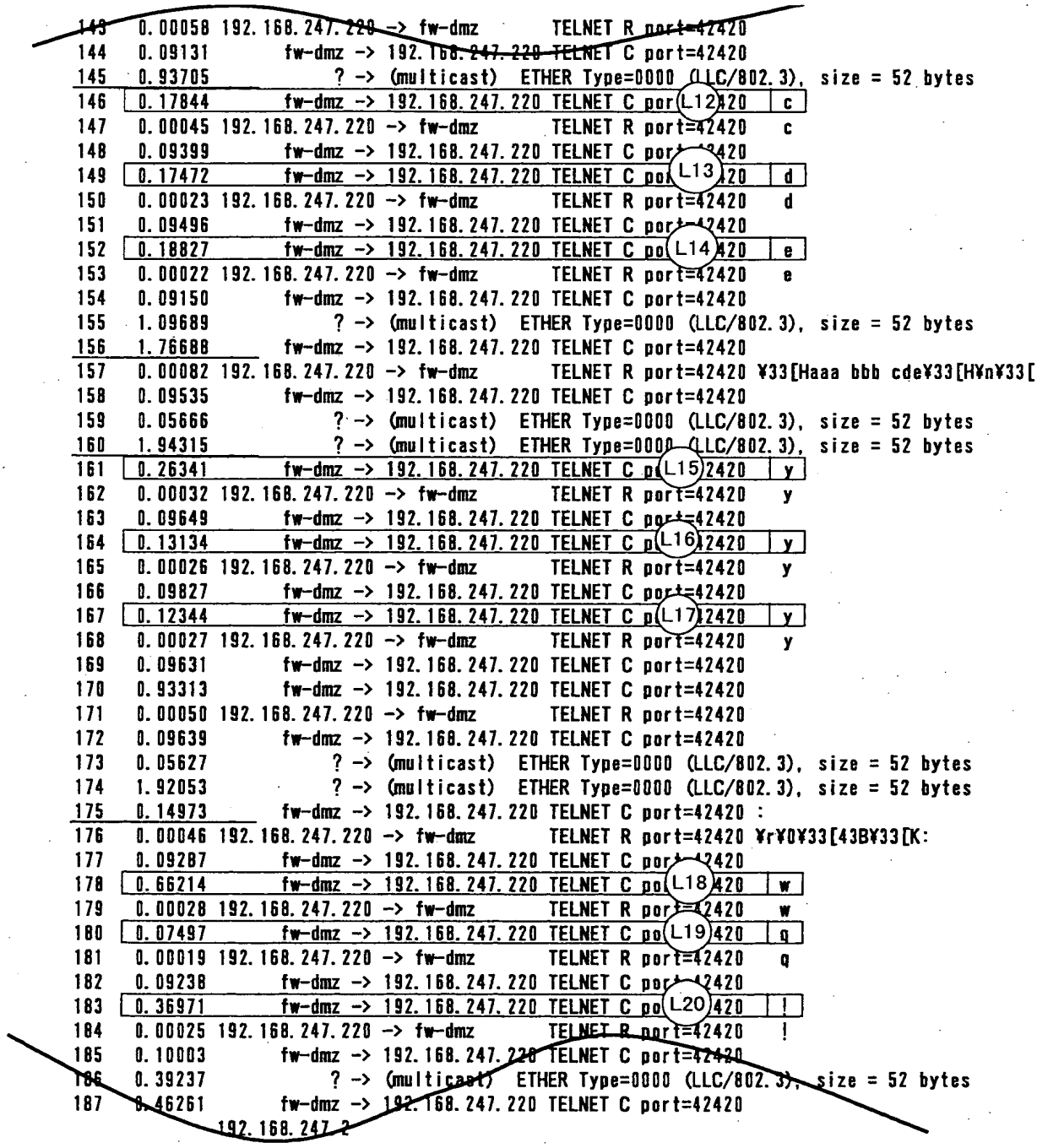

143 0.00058 192.168.247.220 -> fw-dmz TELNET R port=42420
144 0.09131 fw-dmz -> 192.168.247.220 TELNET C port=42420
145 0.93705 ? -> (multicast) ETHER Type=0000 (LLC/802.3), size = 52 bytes
146 0.17844 fw-dmz -> 192.168.247.220 TELNET C port=42420 c
147 0.00045 192.168.247.220 -> fw-dmz TELNET R port=42420 c
148 0.09399 fw-dmz -> 192.168.247.220 TELNET C port=42420
149 0.17472 fw-dmz -> 192.168.247.220 TELNET C port=42420 d
150 0.00023 192.168.247.220 -> fw-dmz TELNET R port=42420 d
151 0.09496 fw-dmz -> 192.168.247.220 TELNET C port=42420
152 0.18827 fw-dmz -> 192.168.247.220 TELNET C port=42420 e
153 0.00022 192.168.247.220 -> fw-dmz TELNET R port=42420 e
154 0.09150 fw-dmz -> 192.168.247.220 TELNET C port=42420
155 1.09689 ? -> (multicast) ETHER Type=0000 (LLC/802.3), size = 52 bytes
156 1.76688 fw-dmz -> 192.168.247.220 TELNET C port=42420
157 0.00082 192.168.247.220 -> fw-dmz TELNET R port=42420 ¥33[Haaa bbb cde¥33[H¥n¥33[
158 0.09535 fw-dmz -> 192.168.247.220 TELNET C port=42420
159 0.05666 ? -> (multicast) ETHER Type=0000 (LLC/802.3), size = 52 bytes
160 1.94315 ? -> (multicast) ETHER Type=0000 (LLC/802.3), size = 52 bytes
161 0.26341 fw-dmz -> 192.168.247.220 TELNET C port=42420 y
162 0.00032 192.168.247.220 -> fw-dmz TELNET R port=42420 y
163 0.09649 fw-dmz -> 192.168.247.220 TELNET C port=42420
164 0.13134 fw-dmz -> 192.168.247.220 TELNET C port=42420 y
165 0.00026 192.168.247.220 -> fw-dmz TELNET R port=42420 y
166 0.09827 fw-dmz -> 192.168.247.220 TELNET C port=42420
167 0.12344 fw-dmz -> 192.168.247.220 TELNET C port=42420 y
168 0.00027 192.168.247.220 -> fw-dmz TELNET R port=42420 y
169 0.09631 fw-dmz -> 192.168.247.220 TELNET C port=42420
170 0.93313 fw-dmz -> 192.168.247.220 TELNET C port=42420
171 0.00050 192.168.247.220 -> fw-dmz TELNET R port=42420
172 0.09639 fw-dmz -> 192.168.247.220 TELNET C port=42420
173 0.05627 ? -> (multicast) ETHER Type=0000 (LLC/802.3), size = 52 bytes
174 1.92053 ? -> (multicast) ETHER Type=0000 (LLC/802.3), size = 52 bytes
175 0.14973 fw-dmz -> 192.168.247.220 TELNET C port=42420 :
176 0.00046 192.168.247.220 -> fw-dmz TELNET R port=42420 ¥r¥0¥33[43B¥33[K:
177 0.09287 fw-dmz -> 192.168.247.220 TELNET C port=42420
178 0.66214 fw-dmz -> 192.168.247.220 TELNET C port=42420 w
179 0.00028 192.168.247.220 -> fw-dmz TELNET R port=42420 w
180 0.07497 fw-dmz -> 192.168.247.220 TELNET C port=42420 q
181 0.00019 192.168.247.220 -> fw-dmz TELNET R port=42420 q
182 0.09238 fw-dmz -> 192.168.247.220 TELNET C port=42420
183 0.36971 fw-dmz -> 192.168.247.220 TELNET C port=42420 !
184 0.00025 192.168.247.220 -> fw-dmz TELNET R port=42420 !
185 0.10003 fw-dmz -> 192.168.247.220 TELNET C port=42420
186 0.39237 ? -> (multicast) ETHER Type=0000 (LLC/802.3), size = 52 bytes
187 0.46261 fw-dmz -> 192.168.247.220 TELNET C port=42420
192.168.247.?
L12
L13
L14
L15
L16
L17
L18
L19
L20

FIG.11

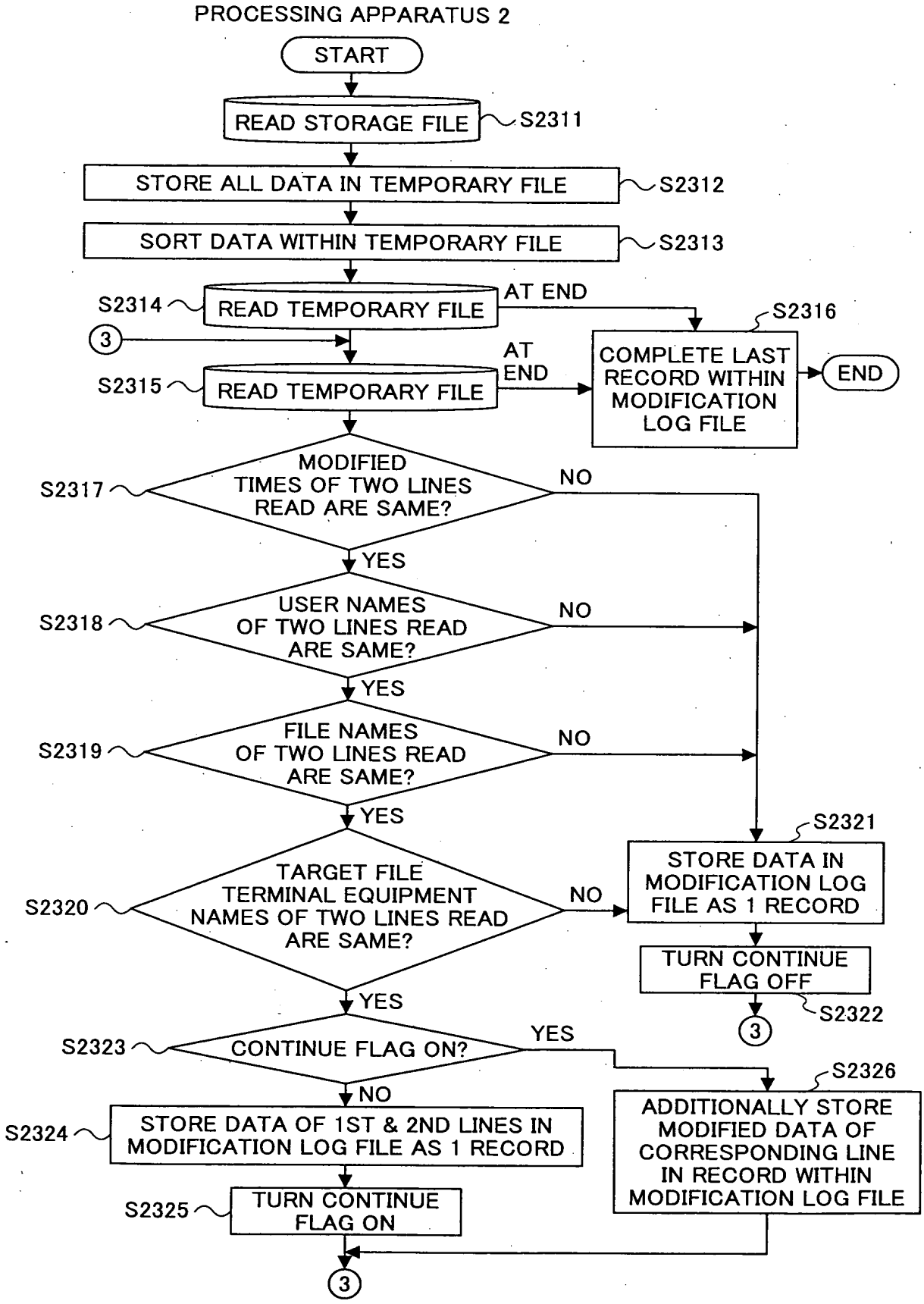

PROCESSING APPARATUS 2
START
READ STORAGE FILE
S2311
STORE ALL DATA IN TEMPORARY FILE
S2312
SORT DATA WITHIN TEMPORARY FILE
S2313
S2314
READ TEMPORARY FILE
AT END
S2316
3
AT END
S2315
READ TEMPORARY FILE
COMPLETE LAST RECORD WITHIN MODIFICATION LOG FILE
END
S2317
MODIFIED TIMES OF TWO LINES READ ARE SAME?
NO
YES
S2318
USER NAMES OF TWO LINES READ ARE SAME?
NO
YES
S2319
FILE NAMES OF TWO LINES READ ARE SAME?
NO
YES
S2321
S2320
TARGET FILE TERMINAL EQUIPMENT NAMES OF TWO LINES READ ARE SAME?
NO
STORE DATA IN MODIFICATION LOG FILE AS 1 RECORD
TURN CONTINUE FLAG OFF
S2322
3
YES
S2323
CONTINUE FLAG ON?
YES
S2326
NO
S2324
STORE DATA OF 1ST & 2ND LINES IN MODIFICATION LOG FILE AS 1 RECORD
ADDITIONALLY STORE MODIFIED DATA OF CORRESPONDING LINE IN RECORD WITHIN MODIFICATION LOG FILE
S2325
TURN CONTINUE FLAG ON
3

FIG.12

MODIFIED TIME	USER NAME	FILE NAME	TARGET FILE TERMINAL EQUIPMENT NAME	FILE CLASSIFICATION	DATA BEFORE MODIFICATION	DATA AFTER MODIFICATION	NUMBER OF LINES
20020703;12:10	fujiwara	test.txt	192.168.247.220	EDIT	AAA	ABC	30
20020703;12:10	fujiwara	test.txt	192.168.247.220	ADD		DDD	50
20020703;12:15	fujiwara	test.txt	192.168.247.220	EDIT	ABC	ABB	30
20020703;12:15	fujiwara	test.txt	192.168.247.220	EDIT	DDD	EEE	50
20020703;12:20	fujiwara	test.txt	192.168.247.220	FAIL	ABB	ABB	30

FIG.13

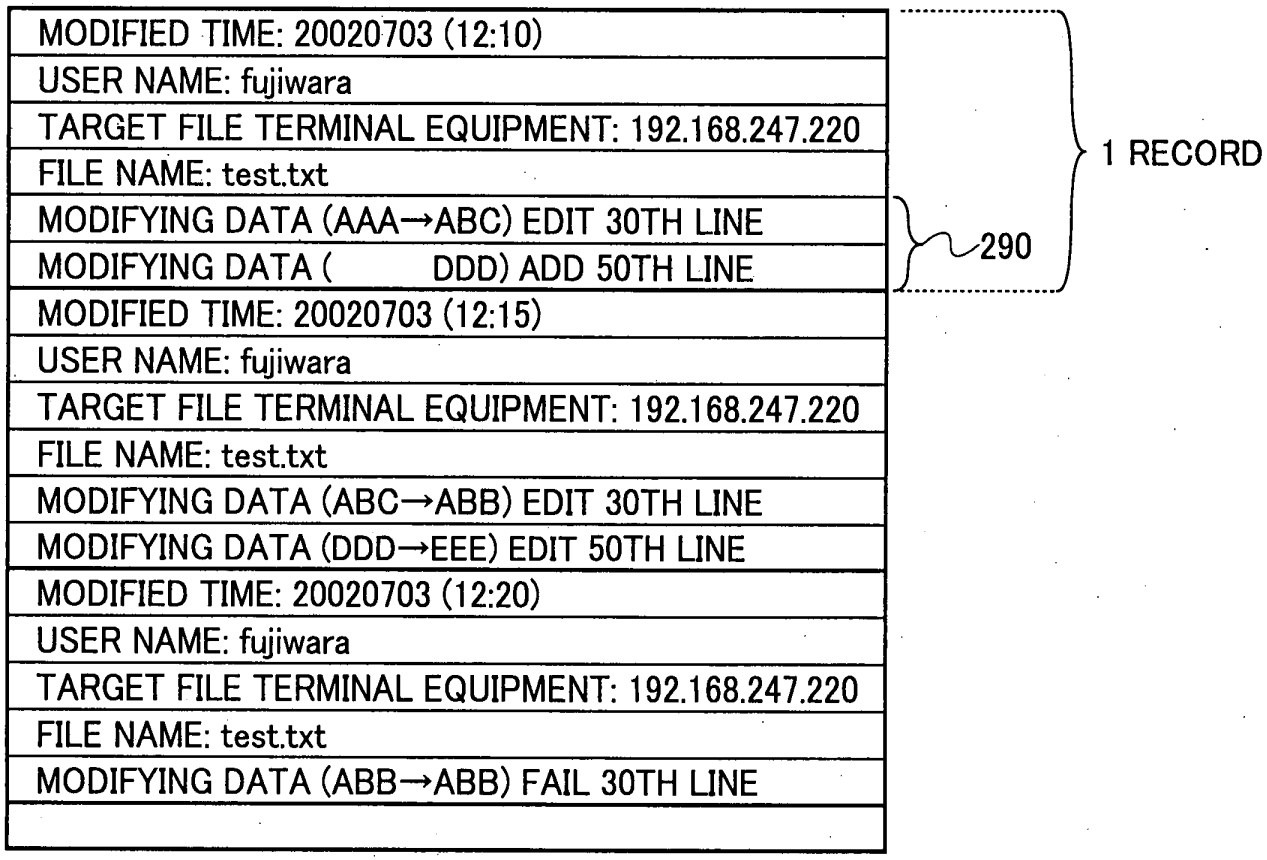

MODIFIED TIME: 20020703 (12:10)
USER NAME: fujiwara
TARGET FILE TERMINAL EQUIPMENT: 192.168.247.220
FILE NAME: test.txt
MODIFYING DATA (AAA→ABC) EDIT 30TH LINE
MODIFYING DATA (DDD) ADD 50TH LINE
MODIFIED TIME: 20020703 (12:15)
USER NAME: fujiwara
TARGET FILE TERMINAL EQUIPMENT: 192.168.247.220
FILE NAME: test.txt
MODIFYING DATA (ABC→ABB) EDIT 30TH LINE
MODIFYING DATA (DDD→EEE) EDIT 50TH LINE
MODIFIED TIME: 20020703 (12:20)
USER NAME: fujiwara
TARGET FILE TERMINAL EQUIPMENT: 192.168.247.220
FILE NAME: test.txt
MODIFYING DATA (ABB→ABB) FAIL 30TH LINE
290
1 RECORD

FIG.14

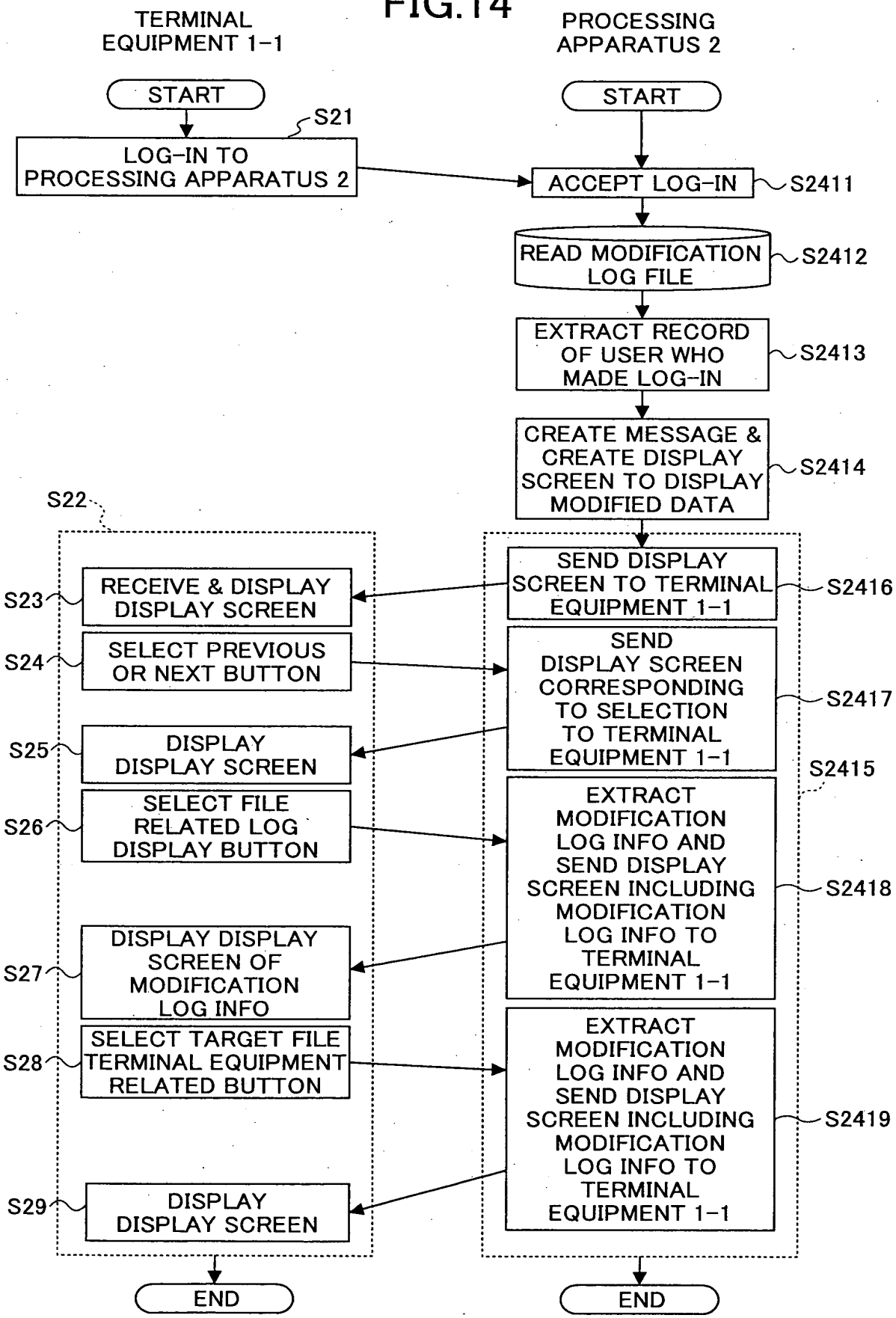

TERMINAL EQUIPMENT 1-1
PROCESSING APPARATUS 2
START
START
S21
LOG-IN TO PROCESSING APPARATUS 2
ACCEPT LOG-IN
S2411
READ MODIFICATION LOG FILE
S2412
EXTRACT RECORD OF USER WHO MADE LOG-IN
S2413
CREATE MESSAGE & CREATE DISPLAY SCREEN TO DISPLAY MODIFIED DATA
S2414
S22
SEND DISPLAY SCREEN TO TERMINAL EQUIPMENT 1-1
S2416
S23
RECEIVE & DISPLAY DISPLAY SCREEN
S24
SELECT PREVIOUS OR NEXT BUTTON
SEND DISPLAY SCREEN CORRESPONDING TO SELECTION TO TERMINAL EQUIPMENT 1-1
S2417
S25
DISPLAY DISPLAY SCREEN
S2415
S26
SELECT FILE RELATED LOG DISPLAY BUTTON
EXTRACT MODIFICATION LOG INFO AND SEND DISPLAY SCREEN INCLUDING MODIFICATION LOG INFO TO TERMINAL EQUIPMENT 1-1
S2418
S27
DISPLAY DISPLAY SCREEN OF MODIFICATION LOG INFO
S28
SELECT TARGET FILE TERMINAL EQUIPMENT RELATED BUTTON
EXTRACT MODIFICATION LOG INFO AND SEND DISPLAY SCREEN INCLUDING MODIFICATION LOG INFO TO TERMINAL EQUIPMENT 1-1
S2419
S29
DISPLAY DISPLAY SCREEN
END
END

FIG.15

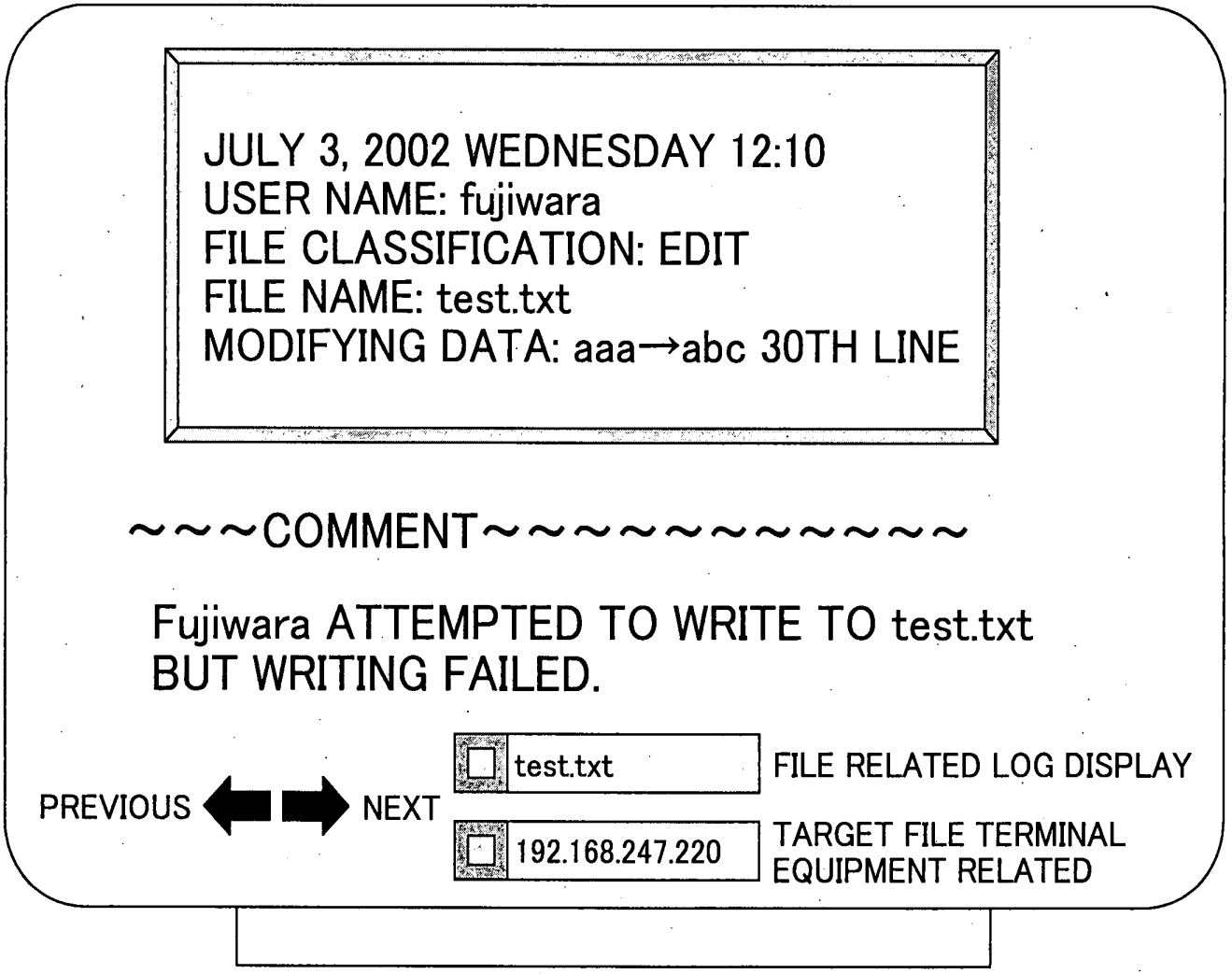
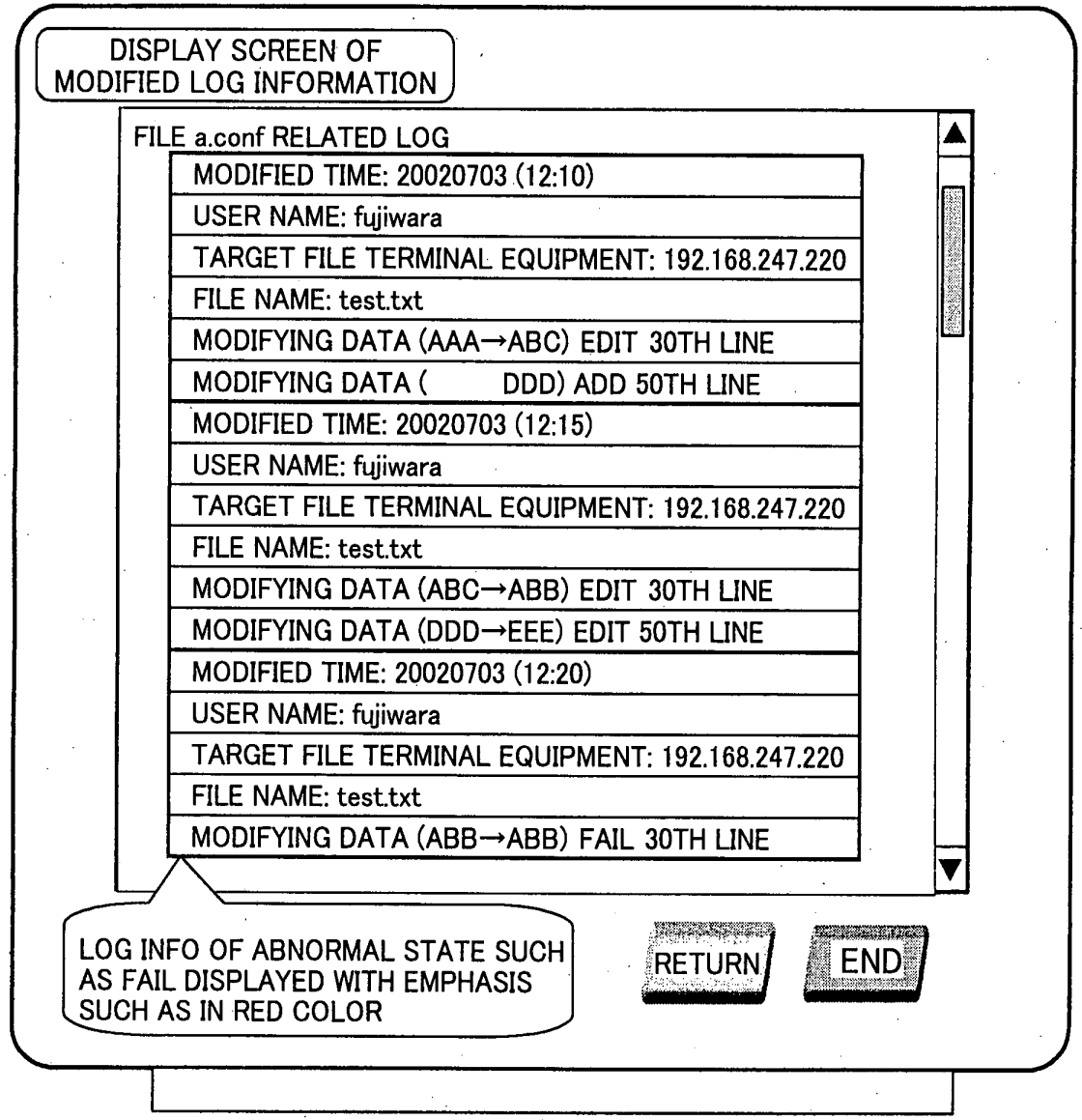

JULY 3, 2002 WEDNESDAY 12:10
USER NAME: fujiwara
FILE CLASSIFICATION: EDIT
FILE NAME: test.txt
MODIFYING DATA: aaa→abc 30TH LINE
~~~COMMENT~~~~~~~~~~~~
Fujiwara ATTEMPTED TO WRITE TO test.txt
BUT WRITING FAILED.
PREVIOUS
NEXT
test.txt
FILE RELATED LOG DISPLAY
192.168.247.220
TARGET FILE TERMINAL
EQUIPMENT RELATED
~~~

FIG.16


DISPLAY SCREEN OF MODIFIED LOG INFORMATION
FILE a.conf RELATED LOG
MODIFIED TIME: 20020703 (12:10)
USER NAME: fujiwara
TARGET FILE TERMINAL EQUIPMENT: 192.168.247.220
FILE NAME: test.txt
MODIFYING DATA (AAA→ABC) EDIT 30TH LINE
MODIFYING DATA (DDD) ADD 50TH LINE
MODIFIED TIME: 20020703 (12:15)
USER NAME: fujiwara
TARGET FILE TERMINAL EQUIPMENT: 192.168.247.220
FILE NAME: test.txt
MODIFYING DATA (ABC→ABB) EDIT 30TH LINE
MODIFYING DATA (DDD→EEE) EDIT 50TH LINE
MODIFIED TIME: 20020703 (12:20)
USER NAME: fujiwara
TARGET FILE TERMINAL EQUIPMENT: 192.168.247.220
FILE NAME: test.txt
MODIFYING DATA (ABB→ABB) FAIL 30TH LINE
LOG INFO OF ABNORMAL STATE SUCH AS FAIL DISPLAYED WITH EMPHASIS SUCH AS IN RED COLOR
RETURN
END